

## STATE OF SOUTH CAROLINA

BEFORE THE  
PUBLIC SERVICE COMMISSION  
OF SOUTH CAROLINA

Application of Duke Energy Carolinas, LLC  
for Approval of Energy Efficiency Plan Including an  
Energy Efficiency Rider and Portfolio of Energy  
Efficiency Programs

## COVER SHEET

DOCKET  
NUMBER: 2007-358-E

(Please type or print)

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## DOCKETING INFORMATION (Check all that apply)

☐ Emergency Relief demanded in petition ☐ Request for item to be placed on Commission's Agenda expeditiously

☐ Other: \_\_\_\_\_

INDUSTRY (Check one)	NATURE OF ACTION (Check all that apply)			
<input checked="" type="checkbox"/> Electric	<input type="checkbox"/> Affidavit	<input type="checkbox"/> Letter	<input type="checkbox"/> Request	
<input type="checkbox"/> Electric/Gas	<input type="checkbox"/> Agreement	<input type="checkbox"/> Memorandum	<input type="checkbox"/> Request for Certificatio	
<input type="checkbox"/> Electric/Telecommunications	<input type="checkbox"/> Answer	<input type="checkbox"/> Motion	<input type="checkbox"/> Request for Investigatio	
<input type="checkbox"/> Electric/Water	<input type="checkbox"/> Appellate Review	<input type="checkbox"/> Objection	<input type="checkbox"/> Resale Agreement	
<input type="checkbox"/> Electric/Water/Telecom.	<input type="checkbox"/> Application	<input type="checkbox"/> Petition	<input type="checkbox"/> Resale Amendment	
<input type="checkbox"/> Electric/Water/Sewer	<input type="checkbox"/> Brief	<input type="checkbox"/> Petition for Reconsideration	<input type="checkbox"/> Reservation Letter	
<input type="checkbox"/> Gas	<input type="checkbox"/> Certificate	<input type="checkbox"/> Petition for Rulemaking	<input type="checkbox"/> Response	
<input type="checkbox"/> Railroad	<input type="checkbox"/> Comments	<input type="checkbox"/> Petition for Rule to Show Cause	<input type="checkbox"/> Response to Discovery	
<input type="checkbox"/> Sewer	<input type="checkbox"/> Complaint	<input type="checkbox"/> Petition to Intervene	<input type="checkbox"/> Return to Petition	
<input type="checkbox"/> Telecommunications	<input type="checkbox"/> Consent Order	<input type="checkbox"/> Petition to Intervene Out of Time	<input type="checkbox"/> Stipulation	
<input type="checkbox"/> Transportation	<input type="checkbox"/> Discovery	<input type="checkbox"/> Prefiled Testimony	<input type="checkbox"/> Subpoena	
<input type="checkbox"/> Water	<input type="checkbox"/> Exhibit	<input type="checkbox"/> Promotion	<input type="checkbox"/> Tariff	
<input type="checkbox"/> Water/Sewer	<input type="checkbox"/> Expedited Consideration	<input type="checkbox"/> Proposed Order	<input checked="" type="checkbox"/> Other: Rebuttal Testimony: Stephen M. Farmer	
<input type="checkbox"/> Administrative Matter	<input type="checkbox"/> Interconnection Agreement	<input type="checkbox"/> Protest		
<input type="checkbox"/> Other:	<input type="checkbox"/> Interconnection Amendment	<input type="checkbox"/> Publisher's Affidavit		
	<input type="checkbox"/> Late-Filed Exhibit	<input type="checkbox"/> Report		

BEFORE  
THE PUBLIC SERVICE COMMISSION OF  
SOUTH CAROLINA  
DOCKET NO. 2007-358-E

In re:	)	
Application of Duke Energy Carolinas, LLC	)	<b>REBUTTAL TESTIMONY OF</b>
For Approval of Energy Efficiency Plan	)	<b>STEPHEN M. FARMER FOR</b>
Including an Energy Efficiency Rider and	)	<b>DUKE ENERGY CAROLINAS</b>
Portfolio of Energy Efficiency Programs	)	
	)	

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***THIS DOCUMENT IS AN EXACT DUPLICATE,  
WITH THE EXCEPTION OF THE FORM OF THE  
SIGNATURE, OF THE E-FILED COPY SUBMITTED  
TO THE COMMISSION IN ACCORDANCE WITH ITS  
ELECTRONIC FILING INSTRUCTIONS.***

1   **Q.   PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND**  
2       **AFFILIATION WITH DUKE ENERGY CORPORATION.**

3   A.   My name is Stephen M. Farmer. My business address is 1000 East Main Street,  
4       Plainfield, Indiana, 46168. I am a former employee of Duke Energy Shared  
5       Services, Inc. and Cinergy Energy Shared Services, Inc. I have been retained by  
6       Duke Energy Corporation as a consultant in the area of rates.

7   **Q.   HAVE YOU PREVIOUSLY FILED DIRECT TESTIMONY IN SUPPORT**  
8       **OF DUKE ENERGY CAROLINAS' APPLICATION IN THIS DOCKET?**

9   A.   Yes, I have.

10  **Q.   WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

11  A.   My rebuttal testimony will include a response to certain issues included in the  
12       prefiled direct testimony of James B. Atkins on behalf of the Southern  
13       Environmental Law Center ("SELC"), Southern Alliance for Clean Energy  
14       ("SACE"), Coastal Conservation League ("CCL"), and Environmental Defense  
15       ("ED") (collectively, "SELC"). More specifically, I will address Mr. Atkins'  
16       apparent confusion relating to the cost of capital rate that was used by Duke  
17       Energy Carolinas when calculating the value of avoided capacity costs in this  
18       proceeding. I will explain that Mr. Atkins has apparently mistakenly compared a  
19       before-tax rate of return with an after-tax rate of return. I will explain that this  
20       error caused Mr. Atkins to improperly conclude that Duke Energy Carolinas has  
21       inflated the value of avoided capacity and energy costs applicable to Duke Energy  
22       Carolinas' demand response programs. Finally, I will explain that Mr. Atkins'

1       assertion that Duke Energy Carolinas inflated the level of first-year jurisdictional  
2       revenues to be collected via Rider EE (SC) to the detriment of South Carolina  
3       customers due to the higher than warranted cost of capital rate is simply not true.

4       **Q.   PLEASE EXPLAIN THE DIFFERENCE BETWEEN A PRE-TAX RATE**  
5       **OF RETURN AND AN AFTER-TAX RATE OF RETURN.**

6       A.   An after-tax rate of return, by definition, does not capture or include the effects of  
7       income taxes. For ratemaking purposes, when one refers to an after-tax rate of  
8       return, one is normally referring to the overall rate of return (“ROR”) that is  
9       multiplied by jurisdictional original cost depreciated rate base in order to  
10      determine the annual amount needed to service debt and equity balances that have  
11      been used to finance the net jurisdictional rate base. After-tax ROR is generally  
12      considered to be equivalent to, or the same as, the weighted average cost of  
13      capital (“WACC”). The two are generally synonymous and are often referred to  
14      interchangeably.

15           Sometimes individuals will refer to a “net-of-tax” rate of return. A net-of-  
16      tax rate of return is calculated by multiplying the weighted average cost of debt  
17      included in the overall rate of return by an after-tax factor. The after-tax factor  
18      takes into consideration the fact that debt costs are deductible when computing  
19      income taxes. Admittedly, there are distinct differences in these two concepts;  
20      therefore, it is important to know what concept is being referred to when  
21      reviewing rate calculations. A before-tax or pre-tax rate of return, by definition,  
22      includes the effects of income taxes. It represents the rate of return that, when

1 multiplied by jurisdictional rate base, will cover not only debt and equity costs but  
2 also income taxes attributable to the equity return.

3 **Q. PLEASE PROVIDE A CALCULATION OF DUKE ENERGY**  
4 **CAROLINAS' PRE-TAX AND AFTER-TAX RATES OF RETURN.**

5 A. Attached to this testimony are two exhibits. Farmer Rebuttal Exhibit No. 1 is a  
6 calculation of before-tax and after tax rates of return that have been used in this  
7 filing. The before- and after-tax rates of return used in this filing are the same as  
8 those used to calculate the Company's most recently approved avoided cost rates.  
9 Mr. Atkins is incorrect when he states that these are 1995 vintage rates. Atkins  
10 Direct Testimony, at 13, lines 4-5. The avoided cost rates were filed in 2007 and  
11 used the same capital structure and cost of debt as the current quarterly filing.  
12 The filing was made in a docket that originated in 1995, which may be the source  
13 of Mr. Atkins' confusion.

14 Farmer Rebuttal Exhibit No. 2 is a calculation of before-tax and after-tax  
15 rates of return that reflects the provisions of the Commission's general rate case  
16 Order in Docket No. 91-1022-E. The debt and common equity cap structure  
17 percentages of 45% and 55%, respectively, found on Farmer Rebuttal Exhibit No.  
18 1 are the fixed debt/equity splits that resulted from the Stipulation Agreement in  
19 South Carolina Docket No. 2005-210-E (i.e., the Duke/Cinergy merger  
20 stipulation) that will be used in quarterly surveillance reports filed after December  
21 31, 2007. The debt cost rate of 6.12% is the weighted average cost of Duke  
22 Energy Carolina's actual debt outstanding at March 31, 2007 that was included in  
23 the quarterly surveillance report filed on May 23, 2007. The tax gross-up factors

1 are calculated based on a combined federal and state statutory income tax rate of  
2 37.1%.

3 **Q. PLEASE ADDRESS MR. ATKINS' STATEMENT, BEGINNING ON**  
4 **PAGE 11, LINE 25, THAT DUKE ENERGY CAROLINAS IMPROPERLY**  
5 **INCEASED THE PROPOSED KILOWATT-HOUR CUSTOMER**  
6 **CHARGE ON RIDER EE (SC) FILED IN THIS PROCEEDING BY**  
7 **OVERSTATING ITS COST OF CAPITAL.**

8 A. Mr. Atkins' statement and opinion beginning on page 11, line 25 of his prefiled  
9 direct testimony is based on a comparison of the pre-tax weighted average cost of  
10 capital used in this proceeding (13.68%) to the after-tax rate of return (10.35% --  
11 Atkins uses 10.30%) approved by the Commission in Duke Energy Carolinas' last  
12 general rate case in Docket No. 91-1022-E. Mr. Atkins states that, "Duke  
13 improved its cost recovery by 298 basis points." In order to check the validity of  
14 Mr. Atkins statement, I prepared a calculation that converted the after-tax rate of  
15 return approved by the Commission in Docket No. 91-1022-E to a before-tax rate  
16 of return. I converted the Commission approved after-tax rate of return to a  
17 before-tax rate of return by multiplying the equity components of the approved  
18 rate of return by a tax "gross-up" factor based on current federal and state income  
19 tax rates. As can be seen when comparing Farmer Rebuttal Exhibits Nos. 1 and 2,  
20 the before-tax rate of return of 13.68% used in this proceeding is 69 basis points  
21 less than the before-tax rate of return of 14.37% that is based on the Commission  
22 finding in Docket No. 91-1022-E. Mr. Atkins has very clearly used a flawed

1 analysis to judge the reasonableness of the cost of capital embedded in the  
2 Company's save-a-watt proposal.

3 Mr. Atkins' failure to recognize that the 13.68% rate of return number was  
4 on a pre-tax basis (even though Mr. Atkins refers to this number as being a pre-  
5 tax rate of return in his testimony and the Company labeled this as a "pre-tax  
6 weighted cost of capital" in the response to Wal-Mart Data Request 1-6) caused  
7 Mr. Atkins to come up with other flawed conclusions. For example, Mr. Atkins  
8 concluded that Duke Energy Carolinas' pre-tax return was significantly in excess  
9 of the overall rate of return approved by the Commission in the 2005 SCE&G  
10 general rate case (Docket No. 2004-178-1-216-E). If Mr. Atkins had performed a  
11 proper comparison, he would have realized that the differential in the two rates  
12 was a fraction of the difference pointed out by Mr. Atkins. Finally, Mr. Atkins,  
13 compared the 13.68% pre-tax cost of capital in this proceeding to the after-tax  
14 return on jurisdictional rate base from the Company's May 23, 2007 quarterly  
15 surveillance filing. This comparison is even more problematic because not only  
16 did Mr. Atkins compare a pre-tax return to an after-tax return but he also  
17 compared the Company's actual earned return for the twelve months ended March  
18 31, 2007 (which was significantly less than its authorized return) to the 13.68%  
19 return used in this proceeding. For the reasons stated above, Mr. Atkins'  
20 recommendation that the Commission reject Duke Energy Carolinas' save-a-watt  
21 proposal due to excessive returns embedded in the proposed charges to customers  
22 is simply wrong and should be denied.

- 1    **Q.     DOES THAT CONCLUDE YOUR PRE-FILED REBUTTAL TESTIMONY?**
- 2    **A.     Yes, it does.**



Calculation of Rates of Return  
Used in Duke Energy Carolinas'  
Energy Efficiency Filing

Line No.	Description	Cap	Weighted		Tax		Line No.
		Structure Percentage	Cost Rate (ROR)	Cost Rate (ROR)	Gross-up Factor	Before Tax ROR	
	(A)	(B)	(C)	(D)	(E)	(F)	
1	Debt	45.00%	6.12%	2.75%		2.75%	1
2	Common Equity	55.00%	12.50%	6.88%	1.5898%	10.93%	2
3	Total	100.00%		9.63%		13.68%	3

	Description	Cap Structure		weighted		Tax		
		Percentage	Cost Rate	Cost Rate (ROR)	Net of Tax Factor	Net of Tax ROR	Gross-up Factor	Before Tax ROR
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
4	Debt	45.00%	6.12%	2.75%	0.629%	1.73%		
5	Common Equity	55.00%	12.50%	6.88%		6.88%		
6	Total	100.00%		9.63%		8.61%	1.5898%	13.68%

Calculation of Rates of Return  
Approved by the Commission  
In Docket No. 91-1022-E

Line No.	Description	Cap Structure		Weighted Cost Rate (ROR)	Tax		Line No.
		Percentage	Cost Rate		Gross-up Factor	Before Tax ROR	
	(A)	(B)	(C)	(D)	(E)	(F)	
1	Debt	40.69%	8.67%	3.53%		3.53%	1
2	Preferred Stock	9.31%	7.53%	0.70%	1.5898%	1.11%	2
3	Common Equity	50.00%	12.25% <sup>1/</sup>	6.12%	1.5898%	9.73%	3
4	Total	100.00%		10.35%		14.37%	4

Note:

<sup>1/</sup> Mid-point of range of return on common equity capital per Commission Order in Docket No. 91-1022-E